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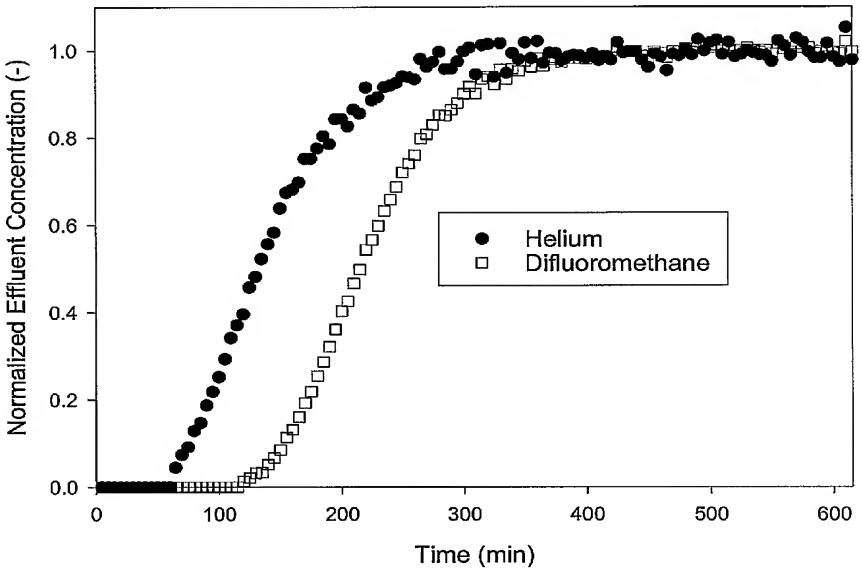
(54) Title: PARTITIONING GAS TRACER TESTS



(57) Abstract: The present invention relates to detection and maintenance of specific water levels. For example, a key component in the operation of almost all bioreactor landfills is the addition of water to maintain optimal moisture conditions. To determine how much water is needed and where to add it, *in situ* methods were generally required to measure water within solid waste. According to the present invention, transport behavior of at least two gas tracers within solid waste can advantageously be used to measure the fraction of the void space filled with water. One tracer is conservative and does not react with solids or liquids, while a second tracer partitions into the water and is separated from the conservative tracer during transport.

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